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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,400	07/05/2001	Bin Yu	F0541	5115

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EXAMINER

ROSE, KIESHA L

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 12/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/900,400

Applicant(s)

YU ET AL.

Examiner

Kiesha L. Rose

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the amendment filed 24 September 2003.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (U.S. Patent 6,159,778) in view of Sultan et al. (U.S. Patent 6,008,099), Vu et al. (U.S. Patent 5,578,865) and Eimori (U.S. Patent 5,245,208).

Kim discloses a SOI (Fig. 1) that contains a semiconductor substrate (20), an insulator layer (18) disposed on the substrate, a semiconductor active layer (10) disposed on insulator layer, the active layer includes a source (26a), a drain (26b) and a body disposed therebetween, the source and body forming an abrupt or hyperabrupt source/body junction, a gate (22) disposed on the body such that the gate, source and drain are operatively arranged to form a transistor. Kim discloses all the limitations except for a graded drain/body junction. Whereas Sultan discloses MOSFET (Fig. 7) that discloses an implanted region forming an interface between the body (74) and the drain (70) resulting in a graded drain/body junction. The graded drain/body junction is formed to facilitate the reduction of the transistor size and take advantage of the

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increased speed and reduced packing density (Col. 2, lines 47-49) and control the amount of deliberate enhanced lateral diffusion (Col. 2, lines 57-58). Therefore it would have been obvious to one of ordinary skill in the art to have a graded drain/body junction to facilitate the reduction of the transistor size and take advantage of the increased speed and reduced packing density and control the amount of deliberate enhanced lateral diffusion as taught by Sultan. In regards to the implanted region formed by tilted atom implantation with an angle of 0 to 20 degrees, introduce lattice defects near the drain/body junction and the atoms being absorbed by the gate when the atoms are implanted at an angle, a "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear. Even though product – by [-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations

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omitted).” Kim and Sultan disclose all the limitations except for the active region to be formed directly on the insulator. Whereas Vu discloses a MOSFET (Fig. 1) that contains a substrate with an insulator (18) and an active region (20/22/24/26) formed directly on the insulator. The active region is formed directly on the insulator in order to provide a more productive high performance integrated circuit. (Column 1, lines 10-12) Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the devices of Kim and Sultan by incorporating the active region to be formed directly on the insulator to form a more productive high performance integrated circuit as taught by Vu. Kim, Sultan and Vu disclose all of the limitations except for the implanted region to be germanium. Whereas Eimori discloses a semiconductor device (Fig. 9) that contains an active region that contains a source and drain region (6) and a germanium implanted drain region (8b) disposed partially in the body region below a portion of the gate adjacent the drain and partially in the drain thereby extending laterally across at least a portion of the drain/body junction. Germanium is doped in the implanted region for inhibition of hot carriers. (Column 2, lines 21-25) Since Kim, Sultan, Vu and Eimori are both from the same field of endeavor, semiconductor devices, the purpose disclosed by Eimori would have been recognized in the pertinent art of Kim and Vu. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the devices of Kim, Sultan and Vu by incorporating a germanium implanted region for the inhibition of hot carriers as taught by Eimori. In regards to claims 4-6 of the germanium having a certain dopant concentration, dose and energy levels, it is noted that the specification contains

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no disclosure of either the critical nature of the claimed concentrations or any unexpected results arising there from. It would have been obvious to one of ordinary skill in the art to have the germanium with a certain dopant concentration, energy levels or atom dose, since it has been held that "In such an situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) See MPEP § 2144.05.

Response to Arguments

Applicant's arguments with respect to claims 1-8 and 18-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiesha L. Rose whose telephone number is 703-605-4212. The examiner can normally be reached on M-F 8:30-6:00 off 1st Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



KLR

November 19, 2003



K. A. ZARDEAN
SUPERVISORY PATENT EXAMINER
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